

**DOES DISRUPTIVE BEHAVIOUR IN
SCHOOLS MEDIATE THE
RELATIONSHIP BETWEEN CHILDREN
AT RISK FOR DELINQUENCY AND
THEIR FUTURE OFFENDING
BEHAVIOUR?**

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Abstract

The development of delinquency in young persons has been a longstanding concern for researchers and policy makers alike. The current study investigated relationships between trait aggression, disruptive behaviour in school and future offending behaviours. This research was conducted as a follow up to the work of McLoughlin et. al., (2010) Panckhurst, (2010) and Panich, (2013) and the primary focus was whether disruptive behaviour during school years mediated the relationship between initial aggression scores and future offending behaviour. Our secondary goal was to analyse positive parenting variables and test their influence on future offending. Longitudinal data obtained from McLoughlin et. al.'s research was analysed and the influence of disruptive behaviour during school was tested in a mediation model to find how much influence this has had on aggression scores and future offending. Positive parenting variables were then added to the model and their influence also tested. The results revealed that disruptive behaviour in school mediated the relationship between aggression and future offending and when positive parenting variables were added to the model the overall predictive accuracy of the model was improved. Overall, the results add to evidence that negative school experiences play an important role in determining whether at-risk youths engage in future offending behaviour.

List of Abbreviations

APQ – Alabama Parenting Questionnaire

CASQ – Child Attributional Style Questionnaire

CBCL – Child Behaviour Checklist

CSBS – Child Social Behaviour Scale

CU – Callous-Unemotional

SES – Socioeconomic Status

1. Introduction

Youth offending has been an important societal issue for numerous years and considerable research across a number of fields has been conducted to analyse the characteristics and risk factors of young offenders that contribute to their offending behaviours and patterns. Some children engage in minor acts of delinquency for excitement, adventure, or for other reasons common among children. For these particular children, offending may be considered a part of typical child development, in which youngsters begin to learn prosocial behaviours by trial and error, as might be the case for early-onset offenders. However, child delinquents, who commit delinquent acts at ages 7 to 12 years, have a two-to-threefold increased risk of becoming tomorrow's serious, violent and chronic offenders (Loeber & Farrington, 2001, pg. xix). Therefore, for some child offenders, early offending behaviour and delinquency are stepping-stones in pathways to serious, violent and chronic offending, as about one third to two thirds of child delinquents are at risk for escalating to serious delinquency (Loeber & Farrington, 2001, pg. xxiii). For these reasons alone, child delinquency constitutes a disproportionate threat to the safety and property of citizens across society. Thus understanding the causes and correlates of youth offending becomes important in order to target these at risk youths for intervention in order to prevent them from becoming serious problematic offenders in the future. This thesis attempts to further the understanding the development of antisocial behaviour. We begin with a review on the current literature on youth offending and delinquent behaviour by outlining what is meant by youth offending and antisocial behaviour, leading to a discussion on Moffitt's (1993) developmental taxonomy and the role it plays in conceptualising the varieties of antisocial behaviour in youths and how they develop. Next we consider risk factors that

place youths at an increased chance of engaging in delinquent or antisocial behaviours and the roles they play in the development of antisocial behaviour. These risk factors include child and personality factors, parenting and family factors, and school and community factors. Lastly will be a discussion on protective factors to youth offending which decrease the chance a youth will engage in delinquent behaviour, before continuing into the current research conducted in this thesis. This thesis is based on the longitudinal research by McLoughlin and colleagues (2010) on a sample of school age children from different low decile schools in Christchurch and continued by Panckhurst (2010) and Panich (2013). Their research used a number of different measures (especially aggression and callous-unemotional traits) to predict and analyse delinquency and problematic behaviour at a number of different stages in the youths lives. We aim to extend this research by testing if disruptive school behaviour might mediate the relationship between aggressive traits and later offending.

1.1 Youth Offending and Delinquent/Antisocial Behaviour

Antisocial behaviour can manifest in many different forms, such as assault, theft, and fraud, and these forms may change over time. The metamorphic quality of antisocial behaviour raises the question of how such diverse behaviours are interconnected, and what basic features or functions underlie the diversity of behaviours (Loeber, 1990). Therefore understanding why some youths choose to engage in antisocial and delinquent behaviour is important as it helps to identify youths 'at risk' , with the hope of intervening as early as possible in their criminal careers in order to prevent them from becoming persistent chronic offenders as they grow into adulthood. Juvenile offending also has serious consequences for these youths as Farrington and Loeber (2001, pg. 8) highlight. Repeated episodes of disruptive behaviour and delinquent acts

during a formative period of life contribute to the resulting stability and continuation of such acts over time. Engaging in years of delinquency tends to rob youths of opportunities to learn and practice prosocial behaviour. This makes desistence from offending less likely as early-onset offenders tend to advance to more serious forms of offending (Farrington, 1998, in Farrington & Loeber, 1998). Engaging in persistent delinquent behaviour is often associated with poor social skills, which leads to serious and continued disturbances in social relationships with family, peers, partners, and later, employers and co-workers. Early-onset offenders often start using illegal substances at a young age and are at risk for becoming substance abusers as they grow older. The problems highlighted by Farrington and Loeber are numerous and serious which makes identifying causes and correlates of juvenile offending an important task for researchers to help prevent these youths from continuing a life of antisocial behaviour.

Juvenile offending is often associated with conditions that society finds difficult to confront. Poverty, racial prejudice, unemployment, domestic violence are all conditions associated with juvenile crime, and they also represent difficult problems for which society has no easy solutions (Hoge, 2001, pg. 2). Some concern about juvenile offending reflects feelings of helplessness in face of these social problems that can invade our daily lives. The question then arises about how prevalent juvenile offending is. National data from the United States in 1997 suggest that just over a quarter of a million youths were arrested up to age 12 years, highlighting the prevalence and seriousness of juvenile offending (Synder, 2001, pg. 25). These numbers may be small compared to older juveniles, but these youths present a unique challenge to service delivery personnel and a great opportunity to those concerned with public safety as these youths

present the greatest chance of continuing their offending into adulthood. Although child delinquents are predominantly boys, close to 1 out of 4 is a girl, and across boys and girls, child delinquents constitute 1 out of 11 total arrestees (up to age 18)(Loeber & Farrington, 2001, pg. xx). Differences in gender in terms of disruptive behaviour already tend to emerge after age 2 years. Studies have confirmed that, already at an early age, more boys than girls show disruptive behaviour such as aggression. However, the prevalence of indirect aggression (e.g. ostracising others) is about the same for both genders (Loeber & Farrington, 2001, pg. xxi). Therefore juvenile delinquency may be more of a concern for males but females must not be neglected in the literature as delinquency constitutes a problem for them also.

Offending statistics from New Zealand highlight that youth offending also significantly contributes to recorded offenses (Ministry of Justice, 2012) and the prevalence in crime is highest for teenagers. The statistics show that between youth aged 10 to 13 and aged 14 to 16; the latter consistently have higher apprehension rates. Though the rates of youth offending in New Zealand have declined, decreasing from 43,225 apprehensions to 33,481 during the years 2002 to 2011 (Ministry of Justice, 2012), the statistics highlight that youth offenders still commit the majority of crimes. The question then arises; does offending continue to increase throughout adolescence and into adulthood or does it begin to decline at some point? Moffitt (1993) notes that rates of offending typically peak at age 17 and after rates of offending drop significantly over the next three years and by age 20 the rate of offenses decreases by 50%. This trend is also reflected in New Zealand statistics; in 2008 the total number of police apprehension rates (excluding traffic offenses) 14 to-16 year olds was 1,572 per 10,000 population. These rates dramatically increased for 17 to 20 years old with 2,153 apprehensions per

10,000 population. This rate then drops significantly to 1,097 per 10,000 population for 21 to 30 year olds. Overall, the adolescent groups of 14-16 and 17-20 account for over 50% of the recorded apprehensions for offenses that occurred in New Zealand.

1.2 Predictors of Delinquency and Juvenile Offending

Disruptive, antisocial and delinquent behaviour during the juvenile years can refer to a number of different acts that may vary in seriousness and in terms of whether criminal laws are violated or not. Disruptive behaviour generally refers to continuous or persistent negative emotional behaviour patterns in children, including difficult temperament in babies, enduring oppositional behaviour, and temper tantrums (Loeber, 1990). Often, the term 'conduct problems' will be used, these problems reflect the parallel with the psychiatric diagnosis of conduct disorder, which indicates a propensity for a repetitive and persistent pattern of behaviour in which the basic rights of others, or major age-appropriate societal norms or rules are violated (American Psychiatric Association, 2013, pg. 469). Conduct disorder is often diagnosed in juveniles displaying problematic antisocial behaviour. The term antisocial behaviour is generally used when more serious acts occur, such as deliberate thefts, vandalism, and physical aggression. Delinquent acts are a subset of antisocial behaviours in which the behaviour violates criminal laws. Not all antisocial or delinquent acts, however, involve harm to individuals, either physically or through property loss. A number of victimless behaviours, such as truancy and substance abuse, are relevant to the development of antisocial behaviour (Loeber, 1990). These behaviours can also manifest themselves in different ways. A child may show a pattern of several antisocial behaviours, such as stealing, being psychically aggressive, illegal substance use, or fire setting. This also applies to disruptive behaviour in school which may be accompanied by extortion,

aggression on teachers, and truancy for example. These different manifestations can be seen as a basic antisocial propensity in juveniles which is often age-dependent, in that some are more characteristic of certain age groups than others. This represents a developing capability to display different behaviours with age (Bell, 1986 in Loeber, 1990, pg. 5). The predictors of delinquency and juvenile offending can be organised into different categories of risk factors. For this review I will separate the predictors into: Child and Personality risk factors, Parenting and Family risk factors, and School and Community risk factors.

- **1.2.1 *Child and Personality Risk Factors***

The age of onset of problematic behaviour has been found to be a very important risk factor for delinquent and antisocial behaviour in juveniles also affecting how long they will engage in these behaviours. Early onset of participation in antisocial behaviour relates to higher participation levels, much more serious offending, and a greater chronicity of participation, that is, the younger individuals begin their problem behaviour, the greater chance of their behaviour continuing and becoming worse (Loeber & Stouthamer-Loeber, 1998, Tolan, 1987 in Tolan & Thomas, 1988). A number of different factors influence this trajectory in young children, for example, a child who shows early signs of disruptive behaviour, parent/s with poor child-rearing skills, low socioeconomic status (SES) status, parental criminality, and has poor emotional awareness is known to be at high risk of future offending (Loeber, 1990; Loeber and Farrington 2001; Frick et al. 2003; McLoughlin et al. 2010). Early delinquent activities by boys and substance use in both boys and girls predict a high rate of offending, and progression to serious substance use, respectively (Loeber, 1988, in Loeber, 1990). Moffitt (1993) also highlighted differences in those juveniles whose problematic

behaviour begins early in childhood and those whose behaviour begins later such as in adolescence. This difference in trajectories is discussed later in this review. Caspi and colleagues (1996) found that undercontrolled behaviour at age 3 years predicted personality disorder, recidivist crime, and violent offenses at age 21 years, as well as suicide attempts. Clearly the earlier problematic behaviour arises, the worse the outcomes in adolescence and adulthood. 'Despite the long time span involved, early temperamental assessments are associated with an increased likelihood that antisocial behaviour will persist into adult life' (Rutter, Giller & Hagell, 1998, pg. 99). These individuals struggle to fit into mainstream society due to their antisocial behaviour, which as a result exacerbates their problems, which continues and worsens the problems they face in their lives. Rates of offending also have been found to change as an individual ages. When official rates of crime are plotted against age, the rates for both prevalence and occurrence of offending appear highest during adolescence; they increase and peak sharply at about age 17 and drop quickly in young adulthood. Most criminal offenders are teenagers and by their early 20s, the number of active offenders decreases by over 50%, and by age 28, almost 85% of former delinquents desist from offending (Farrington, 1986 in Moffitt, 1993; Farrington, 1994).

An important set of personality traits have been identified in the literature that have been found to greatly influence serious juvenile delinquent behaviour. These traits are callous-unemotional traits and have often been associated with conduct disorder (American Psychiatric Association, 2013, pg. 470). Callous-Unemotional traits refer to lack of guilt and empathy and callous use of others for one's own gain in individuals which are often associated with serious antisocial behaviours (Frick et al. 2003; Frick & White, 2008). Frick et al. (2003) reported that the presence of CU traits predicted

greater levels of aggression and particularly greater levels of instrumental and premeditated aggression at a one year follow-up for non-referred sample children with conduct problems. One of Frick et al.'s clearest findings was the importance of CU traits predicting self-reported delinquency. They found that CU traits predicted self-reports of delinquency, especially violent delinquency but the additional presence of conduct problems did not add significantly to the prediction. In addition, findings from an earlier study by Frick and Loney (1999 in Frick et al. 2003) found that the presence of CU traits were predictive of higher levels of aggression at one-year follow-up, which is another factor related to the stability of conduct problems in juveniles. Clearly these traits identify an important subgroup of juvenile offenders who display serious antisocial behaviour and conduct problems. Frick et al. (2005) extended the findings of Frick et al.'s (2003) research to determine the predictive utility of CU traits over a more extended follow up period. The authors identified that the presence of CU traits was associated with lower socioeconomic status, lower intelligence, male gender, and a higher percentage of African-American children. Also, both CU traits and conduct problems were associated with several impulsivity-hyperactivity symptoms of Attention Deficit Hyperactivity Disorder rated by parent and teacher at the initial screening of the children. They also identified that at each of the follow-up assessment points that children with CU traits and conduct problems showed the highest rates of conduct problems, self-report delinquency, and parent-reported police contacts in the sample. Frick et al.'s (2003, 2005) results suggest that children with conduct problems who also show CU traits show a more serious, severe and chronic pattern of antisocial behaviour. Taken together, these findings suggest that pre-adolescent children who show conduct problems and CU traits, whether they are from a clinic-referred or community sample, appear to be at a very high risk for showing antisocial behaviours

and, thus, they should be the focus of interventions designed to reduce a child's involvement in illegal behaviours (Frick et al. 2001 in Frick et al. 2005). This is particularly important as these traits have been found to be highly stable across the lifetime, and is especially true for parental ratings (Frick & White, 2008). However, these traits have also been found to decrease in some juveniles across a period of time (see Frick et al. 2003) and therefore interventions may be most effective for these juveniles. The decrease in the level of CU traits was related to the level of conduct problems displayed by the juvenile, the socioeconomic status of the juvenile's parents, and the quality of parenting the juvenile received (Frick et al. 2003). Therefore, CU traits do appear to be somewhat malleable and maybe influenced by factors in the juvenile's psychosocial environment. CU traits may be important, not only for designating a group of conduct problem juveniles who are at high risk for delinquent behaviour, but they may also designate a group of juveniles who may be at risk for later delinquency but who do not yet display significant conduct problems. These findings are important because many school-based interventions to prevent delinquency use measures of conduct problems as the single method of determining risk (Frick et al. 2003; Frick, 2004; Frick et al. 2005; Frick & White 2008).

A vast number of behavioural and personality factors have been found to be related to less serious delinquent behaviour in the research literature, including; anger/hostility, sociability, venturesomeness (e.g. Heaven, 1993). A number of personality/behaviour risk factors for delinquency have been revealed from meta-analytic reviews such as a history of conduct disorders, being male, a history of stealing/lying, alcohol/drug abuse aggressive personality, physically aggressive, ADHD, sensation seeking behaviours and low intelligence (Hoge, 2001, pg. 83) However, the best social behaviour characteristic

to predict delinquent behaviour (especially before age 13) appears to be aggression (Tremblay & LeMarquand, 2001, in Loeber & Farrington, 2001 chapter 7). McLoughlin et al. (2010) found that youth high on aggression (as measured by the *Child Social Behaviour Scale* (CSBS – Crick and Grotpeter, 1995 in McLoughlin et al. 2010)) were significantly higher on a range of risk factors for delinquency including; psychopathic traits, narcissism, impulsivity, social problems, verbal aggression, loneliness, hyperactivity and inattention, and lower on emotional liability. Also the types of delinquent behaviour have been found to influence the development and persistency of juvenile offending in adolescents. Adolescents whose delinquency consists primarily of drug and alcohol-related behaviours are less likely to advance to more serious delinquency or persist beyond adolescence (Tolan, 1987 in Tolan & Thomas, 1988). The total number of stressful life events experienced in the previous year has been found to predict level of delinquent behaviour (Vaux & Ruggerio, 1983, in Tolan & Thomas, 1988). However, it is likely that different types of stress have different levels of influence on delinquent behaviour and may differentially relate to patterns of delinquent involvement (Patterson, 1986, in Tolan & Thomas, 1988; Howard et al. 2012). Low intelligence scores have also been found to be related to juvenile offending. Those juveniles with lower intelligence tend to struggle in family and school life putting them at an increased risk for delinquent behaviour. Previous research on intelligence and delinquency suggest that (1) the relation is at least as strong as the relation of either class or race to delinquency; (2) the relation is stronger than the relation of either class or race to self-reported delinquency (Hirschi & Hindelang, 1977). Hirschi and Hindelang (1977) extended these findings and showed that IQ has an effect on delinquency independent of class and race, and that this effect is mediated through a host of school variables. A prospective study of early intelligence scores predicting

subsequent delinquency found differences at age 4 between delinquency cases (13.6% of 3,164 births enrolled in the Brown University cohort of the National Collaborative Perinatal Project, who appeared in Family Court charged with juvenile offenses before 18) and matched controls. Kaslow et al. (2007) found that at age 4 Stanford-Binet scores were significantly lower among the delinquent sample and differences were found again at age 7. Their findings support the view that intelligence scores at a young age are a factor in the vulnerability of children for future delinquent behaviour.

An important finding in the research on delinquency is the difference between genders in offending behaviours. Gender has been found to be an important risk factor for antisocial behaviour and being male is one of the strongest predictors of crime that we have among easily measureable attributes (Rutter, Giller & Hagell, 1998). Rutter, Giller and Hagell (1998) suggest that there are four features that stand out when differences between males and females in patterns of offending are considered: (1) the male preponderance is greatest in early adult life; (2) it is more marked for crimes that involved physical force than for property offenses; (3) females are less likely to be recidivists; and (4) women's criminal careers tend to continue over a shorter period of time. Gender differences in the peak of age delinquency have also been found. The peak age for crime in males was 13 years in 1938, 14 in 1961, and 15 in 1983, these increases have been paralleled somewhat by the increase in the age of the end of compulsory schooling (Farrington, 1986, in Farrington & Coid, 2003). The time trend for females moved in the opposite direction over the same time period, decreasing from age 19 in 1938 to age 14 in 1983. More recent data suggest that the peak age of offending of 15 for females and 18 for males (Farrington, 1996, in Farrington & Coid, 2003). These gender trends and differences highlight the importance of healthy development in

adolescence because this age period seems to be very important in the engagement and prevalence of delinquent behaviour in both males and females. Gender differences in types of delinquent and antisocial behaviour have also been found. Boys consistently have been found to have more reported aggression and delinquency than girls (Griffin et al. 2000). Griffin et al. (2000) in a study of moderating effects of family structure and gender in delinquency among urban minority youth found several gender differences. Their results showed that more boys than girls had ever smoked cigarettes and more boys than girls were aggressive and more delinquent in the past year and suggest that males are at a much higher risk for delinquent behaviour than females.

Peer influences have also been found to have an effect on juvenile delinquency. The significance of peer influences would appear to be much less than that of child, family and community risk factors (Coie & Miller-Johnson, 2001, in Loeber & Farrington, pg. 191). However Pitts (1999) found that association with friends who were involved in crime is one of the most significant factors in a young person's involvement or persistence in crime. Child factors (e.g. aggression) combine with family factors (e.g. coercive parenting and inadequate supervision; discussed later) in the context of community factors (e.g., poverty; also discussed later) to produce children who enter school already exhibiting aggressive and disruptive behaviour. As a result this behaviour leads to social rejection by peers and adults. It is also the case that aggressive children tend to associate with each other and form delinquent peer groups. Coie and Miller-Johnson (2001) suggest that peer rejection has two consequences; one is the tendency to look toward deviant peers for social support and approval; the other is to increase the hostility and emotional reactivity of youths and, therefore, increase aggressiveness and disruptiveness. As juveniles move through late childhood into

adolescence they place more importance on the time spent with peers and establishing peer relationships, thus increasing their susceptibility to peer influence (Monahan et al. 2013). The strongest evidence for the change to increased or more serious offending as a consequence of antisocial peer influences comes from research on either late-starting offenders or on the escalation of offending among early starters whose deviant antisocial peer associations seem largely linked to their early disruptive and delinquent behaviour (Elliot & Menard, 1996; Patterson, Capaldi, & Blank, 1991, in Coie & Miller-Johnson, 2001). Overall, research suggests that antisocial peers do contribute to serious offending during the transition from childhood to adolescence.

- **1.2.2 Parenting and Family Risk Factors**

The effects of Family and Parenting factors on delinquency has been studied extensively in the research literature and it has been found that negative experiences within the family environment greatly increases the chance of delinquent behaviour in youths (Wasserman & Seracini, 2001, pg. 165). For example, a recent meta-analysis (Derzon, 2010) which examined the family predictors of child antisocial, criminal, and violent behaviour found that poor child-rearing skills, home discord, and the child's maltreatment history showed consistent relationships with an early onset of delinquency. The strongest predictors of early violence in juveniles included family size (larger families tend to have fewer resources to spread among offspring), parenting skills, and parental antisocial history. Neuropsychological and temperamental difficulties demonstrated as early as the preschool period make certain children difficult to raise. When deficits in parenting interfere with proactive parenting co-occur with early child difficulties, these also are thought to be particularly important in the development of an early-onset pattern of antisocial behaviour (Wasserman & Seracini,

2001, pg. 165). Youths whose families are characterized by high levels of conflict and control and low levels of cohesion are more likely than their peers to be diagnosed with externalizing disorders, to display symptoms of depression (Haddad et al. 1991; Garber and Horowitz 2002, in Aaron & Dallaire, 2010), and to exhibit higher levels of delinquent behaviour (Matherne and Thomas 2001). Pitts (1999) identified a number of family dynamics related to youth offending. Young people living with both their natural parents were less likely to offend than those in one-parent families or living with a step-parent. Poor relationships with step-parents correlated closely with continuous involvement in crime. Young people who reported being less attached to their families were more likely to be involved in crime and those who ran away from home before they were 16 were particularly likely to offend, as were males who had poor relationships with their fathers.

Matherne and Thomas (2001) suggest that two specific aspects of the family environment seem to be influential on delinquency; family status and family type. Family status refers to the composition of the family (e.g. single parent vs. two parent family). Results from Matherne and Thomas's (2001) study suggest that family status moderated the relationship between family type and delinquency. Research on family status has consistently highlighted that children from single parent and reconstituted families may be more susceptible to behavioural problems than children from traditional families (Griffin et al. 2000). Family type refers to interactions within the family unit, for example, levels of adaptability (adjusting to situational stressors), cohesiveness (level of attachment and emotional bonding), and communication. Research by Griffin and colleagues (2000) suggest that a strong family unit is a protective factor for delinquency. More parenting monitoring was associated with lower

delinquency levels, slightly less smoking and lower alcohol use in boys but not in girls. Having brothers and sisters who were antisocial also increases the chance of antisocial behaviour in other siblings. Young people whose brothers and sisters had been in trouble with the law were more likely to get into trouble themselves (Pitts, 1999). In the Cambridge study, boys who already has delinquent siblings by ages 8 years were found to be more likely to break the law at age 10 to 16 and were more likely to continue offending and develop chronic criminal careers in adulthood up to age 32 (Farrington, 1995). This result was found even after controlling for numerous indicators of family and community adversity. The family environment can also reduce the chance of delinquency in juveniles where it operates as a positive unit (see section on protective factors for full discussion).

Parental criminality has a strong influence on delinquency in juveniles. If a parent becomes incarcerated in places any children they have at increased risk for engaging in antisocial behaviour themselves. When a parent is removed from the family unit, family dynamics change as a result. Interactions within the family unit may place the children at risk for poor social and academic functioning. These interactions become important when considering the stress the incarceration of a parent is likely to place on the family. With a parent incarcerated and removed from the family, the family must reorganize and restructure their dynamics, and as a result children may be unsupervised for long periods of time as the other parent may be working more hours to compensate for the loss of income (Aaron & Dallaire, 2010). Another result of an incarcerated parent is an increase of conflict within the family. Children exposed to high levels of conflict at home may model interactions with friends and other non-family members after the interactions of family members (Aaron & Dallaire, 2010). Other influences could also

increase this risk within the family, for example, families of children diagnosed with conduct disorder or opposition-defiant disorder experience higher levels of conflict in their families than peers (George et al. 2006). If paired with exposure to an incarcerated parent, this may further increase the stress and conflict placed on the family, further increasing the chance of delinquent behaviours in the children. Other studies have also found that parents who are criminals were less likely to provide adequate supervision ($r = .33$ for fathers and $.40$ for mothers) and more likely to show poor child rearing characterised by harsh and erratic discipline, cruel attitudes, and family conflict ($r = 0.11$ and 0.38) (Rutter, Giller & Hagell, 1998).

- **1.2.3 School and Community Risk Factors**

Academic performance in school has been consistently identified as a factor influencing delinquent behaviour in juveniles in the school system and has been found to be inversely related to antisocial behaviour among young people. Poor academic performance co-occurs with or is a predictor of antisocial behaviour (Maguin & Loeber, 1996; McEvoy & Welker, 2000). In a meta-analysis of studies on the relationship between academic performance and delinquency, Maguin and Loeber (1996) revealed several findings regarding this relationship. Firstly they found that poor academic performance is related to the onset, frequency, persistence, and seriousness of delinquent offending in both boys and girls. In contrast, higher academic performance, is associated with desisting from offending. They found that these associations were stronger for males than females and for whites than for African Americans. They also found that poor academic performance predicted delinquency independent from socioeconomic status suggesting that poor academic performance is a risk factor for juveniles regardless of their background. Their second major finding is that cognitive

deficits and attention problems are common correlates of both academic performance and delinquency which is consistent with prior research of inattentions. Those children who have attention problems struggle to remain focused in the classroom which hinders their ability to learn, affecting their academic performance. As a result they are more likely to fall behind academically increasing their chances of engaging in antisocial behaviour. Their third and final major finding was that interventions that improve academic performance co-occur with a reduction in the prevalence of delinquency. This last finding especially highlights the influence that academic performance has on delinquency. However, McEvoy and Welker (2000) caution generalising the findings as many students who experience academic difficulties do not engage in antisocial behaviour and many academically successful students are persistently deviant in their conduct.

Dropout from school has been found to be associated with an increased chance of youths engaging in delinquent behaviour (Farrington & Loeber, 2001; Sweeten, Bushway & Paternoster, 2009; Henry, Knight & Thornberry, 2012). Fagan and Pabon (1990) found that compared with high-school graduates, those who dropped out of high school were more involved in all forms of delinquency, drug use and drug selling, and had more contacts with the juvenile justice system. Farrington (1989 in Loeber & Farrington, 2001) in his study of South London working-class boys, found that school dropouts had higher self-reported levels of violent crime from ages 16 to 32 and had accumulated more criminal convictions between the ages 10 and 32 than those who finished school.

There have been a number of suggestions as to why there is a relationship between dropout and delinquency. It may be because 1) dropping out of school has a causal

impact on delinquency and problem behaviours, 2) committing delinquent acts and other problem behaviours has a causal impact on dropping out of school, 3) the causal relationship is reciprocal rather than unidirectional, or 4) no causal relationship exists, and dropping out of school, committing delinquent acts, and using drugs are simply different manifestations of a common cause, and an relationship found among them is spurious rather than causal (Sweeten, Bushway & Paternoster, 2009). The results however tend to favour the first two suggestions (Loeber & Farrington, 2001). The risk of dropout is also increased by an unhealthy school climate. An unhealthy school climate is linked with a poorly organised, malfunctioning school that has a prevalent sense of hopelessness among students and staff which is accompanied by high rates of student absenteeism, and a higher incidence of school mobility (McEvoy & Welker, 2000). An unhealthy school climate not only contributes to academic failure, leading to a lack of school attachment, school dropout and criminal offending, but can also contribute to aggressive students' violent behaviour (Loeber & Farrington 2000, Sutherland, 2011). A key finding from Sutherland's (2011) study, who researched the relationship between school and youth offending, is that although the school experience does not cause a young person to commit crimes, the cumulative effect of negative school experiences can result in a student's disillusionment from the education system, aggravating pre-existing risk factors that lead a vulnerable person towards chronic antisocial behaviour and criminal offending.

Economic problems and poverty have been found to be linked to delinquency. Children of families living with economic disadvantage, in poverty, and with low socioeconomic status, have been regularly found to be at greater risk of delinquency and violent crime (Merton, 1938; Bolger, Patterson, Thompson, & Kupersmidt, 1995). Lipsey and Derzon,

in a meta-analysis of prospective longitudinal studies, tested a large number of predictors of delinquency found economic disadvantage to be one of the strongest predictors of violent or serious delinquency from ages 6 to 11 years (Lipsey & Derzon, 1998). Economic problems often lead directly to delinquency and these problems may contribute to a range of negative emotions, such as anger and depression. As a result these negative emotions create pressure for corrective action, with delinquency a possible response. Individuals may turn to delinquent and antisocial behaviour, such as stealing, to improve the economic problems they are experiencing, they may strike out at others in their anger, or they may turn to drug use to feel better (Agnew et al. 2008). These economic problems may also decrease levels of social control, because individuals experiencing these issues have little to lose by engaging in delinquency. Furthermore, economic problems may have an indirect effect on delinquency. Research suggests that economic problems contribute to delinquency partly through the family problems they create, such as family conflict and the use of harsh disciplinary techniques (Conger et al., 1992, 1994; Agnew et al. 2008). Conger and colleagues (1992, 1994), in a longitudinal study, analysed the impact of economic pressure on parents and their early adolescent children and found that economic pressure does have an effect on antisocial behaviour, but its impact is indirect: it is mediated by parental depression, marital conflict, and parental hostility which has an effect on young adolescents. These results suggest that economic pressure puts strain on the family unit increasing problems within the family which in turn increases the chance of adolescent delinquency.

3.1 Offending Trajectory Theories

It is widely accepted that not all youth who engage in criminal activity continue to offend into adulthood (Fougere & Daffern, 2011). Research on youth offenders have typically identified two types of young offenders; a large group of that is only antisocial during adolescence ('adolescent-limited') and a small group that engages in antisocial behaviour at every life stage (life-course-persistent'). Moffitt and colleagues (1993, 2001 & 2002) suggest that age of onset and the duration of offending are the key defining attributes that distinguish between these two types of offender. Patterson (Patterson et al., 1991; Patterson, Reid & Dishion, 1992 in Krohn et al. 2001 pg. 69) made a differentiation, calling the two groups 'early starters' and 'late starters'. Both theories suggest that child delinquents will engage in more serious antisocial behaviour than will late starters and that the delinquent behaviour of early starters, unlike that of late starters, will persist into adulthood. For example, Moffitt (1993) argued that youths who begin offending in childhood are two to three times more likely to develop into chronic 'life course persistent offenders' compared to those whose offending begins in adolescence. Both theories also suggest that the two groups can be distinguished in terms of the etiologies that generate such behaviour. This makes prediction of criminality from risk factors like those reviewed above difficult as several different criminal trajectories or pathways exist and that the relevant risk factors may be different for each of these trajectories. According to the theory of life-course-persistent antisocial behaviour, children's neuropsychological problems interact cumulatively with their criminogenic environments across development and this culminates in a pathological personality for the individual. In contrast, according to the theory of adolescent-limited antisocial behaviour, a contemporary maturity gap encourages teens

to mimic antisocial behaviour in ways that are normative and adjustive (Moffitt, 1993). In other words adolescent-limited antisocial behaviour generally begins in pre-adolescence and ends in late adolescence and usually involves only minor offending. By contrast, the 'life-course-persistent' offender's antisocial behaviour typically begins early in their life and continues through adolescence and into adulthood and involves much more serious offending behaviours and patterns (Moffitt, 1993).

- **1.3.1 Adolescent-Limited Offenders**

Adolescence-limited offenders are common, situation and temporary offenders (Panckhurst, 2010, unpublished Master's thesis). Adolescence-limited antisocial behaviour emerges alongside puberty, when healthy youngsters experience dysphoria during the usually roleless years between their biological maturation and their access to mature privileges and responsibilities, a period often called the maturity gap (Moffitt, 1991, 1993; Moffitt & Caspi, 2001). While adolescents are in this period it is normal for them to mimic the life-course-persistent youths' delinquency style as a way for them to demonstrate autonomy from their peers, while winning affiliation with peers, and increasing social maturation (Moffitt & Caspi, 2001). They want to establish intimate bonds with the opposite sex, make their own decisions, and have material goods. Yet, they are limited by their age in pursuing those desires. As a result, adolescents become aware of the delinquent behaviour of older teens, especially life-course-persistent ones, who already have access to the resources that the adolescent youths desire. They engage in mimicry to attain these resources. However, because their predelinquent development was healthy, most adolescent-onset delinquents desist from their antisocial behaviour when they age into real maturity. While a few males have evidence of antisocial behaviour that emerges early in their lives and is persistent thereafter, the

majority of boys who become antisocial first do so during adolescence (Elliot, Knowles, & Canter, 1981, in Moffitt, 1993). Importantly, adolescence-limited offenders do not have the biological deficits that the life-course-persistent offenders have. In addition, adolescence-limited offenders have had fewer years to build up any cumulative disadvantage of their behaviour. These factors combine to allow adolescence-limited offenders to take advantage of other more prosocial opportunities and pathways and as a result they will gradually desist from antisocial behaviour as prosocial options become more apparent (Krohn et al. 2001, pg. 71). The large onset of adolescent-limited offenders has been studied in a representative sample of New Zealand boys (Moffitt, 1991, in Moffitt, 1993). Between ages 11 and 15, about one third of the sample joined the delinquent lifestyles of the 5% of boys who had shown stable and pervasive antisocial behaviour since a young age (around preschool). Taken together, these adolescent newcomers to antisocial behaviour had not formally exceeded the normative levels of antisocial behaviour for boys at ages 3, 5, 7, 9, or 11. Despite their lack of prior experience, by the time they were age 15, the newcomers equalled their early-onset antisocial peers in the variety of laws they had broken, the frequency which they broke them, and the amount of times they appeared in juvenile court (Moffitt, 1991 in Moffitt, 1993).

- **1.3.2 *Life-Course-Persistent Offenders***

Life-course-persistent offender's antisocial behaviour is persistent, stable over a long period of time which are generally found among a relatively small group of males whose behavioural problems are also quit extreme (Moffitt, 1993). Across the life course, life-course-persistent offenders display changing manifestations of antisocial behaviour; biting and hitting at age 4, stealing and truancy at age 10, selling drugs and stealing cars

at age 16, robbery and rape at age 22, and fraud and child abuse at age 30; 'the underlying disposition remains the same, but its expression changes form as new social opportunities arise at different points in development' (Moffitt, 1993). Compared to adolescent-onset antisocial behaviour, life-course persistent antisocial behaviour originates early in the juvenile's life, when the difficult behaviour of a high-risk young child is exacerbated by a high-risk social environment. The high risk emerges from childhood-onset delinquents having histories of inadequate parenting, neurocognitive problems, and temperament and behaviour problems, which are typically not found in adolescent-onset delinquents (Moffitt & Caspi, 2001). The process begins because the child is likely to have neurocognitive deficits such as reading and speech problems and symptoms such as inattention, impulsivity, and aggression. These problems are challenging because parents of children who have these problems might also lack the psychological and physical resources to help cope. This results in a series of problematic parent-child interactions in a troublesome family environment leading to persistent antisocial behaviour (Krohn et al. 2001, pg. 71). These risk factors expand to the environmental as the child ages, which included poor relations with people such as peers and teachers, then later with partners and employers. Over the first two decades of development a sequence of interactions between the child and the environment culminate to construct a disordered personality, with traditional features of physical aggression and antisocial behaviour persisting to midlife (Moffitt, 1993; Moffitt & Caspi, 2001; Moffitt et al. 2002). Life-Course-Persistent offenders consist almost entirely of boys (5%) although some studies suggest prevalence among females of 1-2% (Sattin & Magnusson, 1989). West and Farrington (1977 in Moffitt, 1993) observed that stealing alcohol abuse, sexual promiscuity, reckless driving, and violence were linked across the life course. The outcomes for the life-course-persistent offender are bleak; drug and

alcohol addiction, unsatisfactory employment; unpaid debts; homelessness; drunk driving; violent assault; multiple and unstable relationships; domestic violence; abused, neglected and abandoned children; and psychiatric illness have all been reported at very high rates for offenders who continue offending past age 25 (Farrington & West, 1990 in Moffitt, 1993).

1.4 Protective Factors

Protective factors for youth offending are those variables associated with a reduction in risk for child delinquents to develop into serious and violent youth offenders. Jessor et al. (1995) expands on this and conceptualizes protective factors in juveniles as those factors that decrease the likelihood of them engaging in problem behaviour: through direct personal or social controls against its occurrence (e.g. strong religious commitment or predictable parental sanctions); through involvement in activities that tend to be incompatible with problem behaviour (e.g. activities within the family group or within the community); and through orientations toward and commitments to conventional institutions (e.g. schools). This conceptualization provides some idea of how protective factors influence youngsters to prevent them from engaging in antisocial behaviour as they go through adolescence. Other examples of protective factors for delinquency and youth offending are; female gender, prosocial behaviour during preschool years, good cognitive performance and a positive family environment. The presence of a single protective factor is no guarantee that a youth who has multiple risk factors for delinquency will avoid these antisocial behaviours. What does matter is the proportion of risk and protective factors because the presence of multiple protective factors may buffer or offset the impact of youth's exposure to multiple risk factors (Loeber & Farrington, 2001, pg. xxvii).

Fergusson and Lynskey (1996) in a longitudinal study followed a sample of children who had had severe high-risk experiences, and compared within that group those who went on to be delinquent and those who did not. They used a family adversity index (based on 39 measures) that had proved to be strongly predictive of antisocial behaviour and found that resilient youngsters (those who had a history of high-risk experiences but did not go on to offend) had significantly lower adversity scores. They tended to have a high IQ at age 8, had lower rates of novelty seeking at age 16 and were less likely on both maternal and self-reports to have affiliations with delinquent peers. They also found some other interesting findings; females were found to be no more resilient than males and parental attachments made little difference. Positive experiences within education and schooling can also act as protective factors for delinquency. Quinton et al. (1993 in Rutter, Giller & Hagell, 1998, pg. 208) found that positive experiences at school made it much more likely that high-risk juveniles (background factors) would plan their lives (in terms of marriage and work) and that those who displayed such planning were less likely to become part of a delinquent peer group. This in turn made it less likely that they would marry and have kids with someone with antisocial problem behaviours which made it less likely that the marriage would be problematic and break down and that the experience of a harmonious supportive marriage made desistance from antisocial behaviour more likely. These results highlight the cumulative effect protective factors can have on desistance of antisocial behaviour throughout adolescence and early adulthood. Youths who display more skilful social behaviour (e.g. social problem solving, greater respect and awareness of others, better communication) and who are socially outgoing and have a pleasant personality are less likely to use drugs or become involved in delinquent or violent behaviour. Just as antisocial peers can be a risk factor for delinquency, prosocial peers can be a protective

factor; youths who report stronger emotional bonds to peers that engage in prosocial behaviours and abstain from drug use and delinquent behaviour are less likely to engage in these behaviours (Arthur et al. 2002).

As discussed previously, the family environment can be a risk factor for juvenile delinquency and antisocial behaviour; however, it can also be a protective factor for delinquency. One of the factors that may influence successful adjustment in adolescence is good parenting practices, including close parental monitoring, frequent communication about important issues, and regular involvement and positive interactions between the parent and the adolescent (Griffin et al. 2000). For example Rosenbaum (1989 in Matherne & Thomas, 2001) found that adolescents who have a strong bond with their parents are less likely to be delinquent. High-risk youth may also benefit greatly from these parenting factors, increasing their resiliency. Griffin et al. (2000) gives an example of resiliency: 'For example, a single mother with excellent parenting practices may increase resiliency in her adolescent son or daughter by instilling appropriate values and norms regarding conventional behaviour and may help the adolescent avoid involvement with substance use, delinquency, and aggression by monitoring his or her whereabouts. Conversely, the absence of good parenting among similar high-risk youth may lead to high levels of problem behaviour, in part because adolescents may fail to internalize conventional attitudes and may begin to affiliate with deviant peer groups' (Griffin et al. 2000). The structure of the family unit has also been found to be a protective factor. Differences in school behaviour and achievement between students from intact, reconstituted, and single-parent families were studied by Featherstone and colleagues (1992). They found, as intuition would be expect, that students from intact families had fewer absences and 'tardies' (a descriptive measure of

punctuality), higher grade point averages, and fewer negative and more positive teacher behavioural ratings than those students who were from reconstituted and single-parent families. It appears then that educationally and behaviourally favourable goals are associated with a positive family status which can act as a protective factor for delinquency. Students from intact homes were not given disruptive influence and disinterested attitude marks as often as students from single-parent and reconstituted homes. Featherstone et al. (1992) concluded therefore that it is advantageous to reside in an intact two-parent family in terms of protecting young persons from delinquency.

1.5 McLoughlin et al.'s (2010) Longitudinal Research

McLoughlin et al. (2010) attempted to identify youths at high-risk of offending in a low socioeconomic sample of children aged 10-11 years in New Zealand. Specifically, they asked if the Callous-Unemotional and Aggression traits identified by Frick et al. (2005) were associated with risk factors for offending. Frick et al. (2005) had proposed that Callous-Unemotional (CU) traits are an important personality factor that is associated with youth offending. McLoughlin et al.'s (2010) results showed that scores for those youths high on CU traits were significantly worse than those low on CU traits on a number of measures including stress management and dysfunctional parenting. Their results along with others (Moffitt & colleagues; 1993, 2001 & 2002 Fougere & Daffern, 2011) show that there are some important traits and risk factors for youth that can place them on a trajectory for serious offending throughout their adolescent and also into adulthood.

The current research is an attempt to continue the research of McLoughlin et al. (2010), as well as Panckhurst (2010, unpublished thesis) and Panich (2013, unpublished thesis) who studied whether Callous-Unemotional traits and aggression could identify high risk

youths recruited from the low-decile schools, ranked 1-3, in Christchurch. Panckhurst (2010) used CU traits and aggression measured at an initial screening, to predict disruptive behaviours in school measured at a later time. He used a cut-off of above the 75th percentile to characterise those youths who were 'high' in aggression; this was based on the criteria used by Frick et al. (2005). His results showed that both aggression and CU traits assessed at Time 1 were able to predict youth who were more likely to be involved in disruptive behaviour in school during the following year, but that callous-unemotional traits did not explain additional variance over and above aggression (McLoughlin et al. also found that aggression accounted for more unique variance compared to CU traits). It seems that aggression may be a more important personality dimension than CU traits in predicting antisocial behaviour in youths. Lastly the primary focus of Panich's (2013) study was to investigate whether CU traits could predict later offending. Her study also had a secondary goal, which was to determine whether family factors also predict offending in combination with CU traits and aggression. She found that callous-unemotional traits and aggression were both related to offending as found by McLoughlin et al. (2010) and Panckhurst (2010). She also found as part of her second focus that family factors (in particular the ones related to parenting) were correlated with youth offending and antisocial behaviour traits, supporting findings from previous research (Stattin & Magnusson, 1989; Loeber & Stouthamer-Loeber, 1998; Griffin et al. 2000; Panckhurst, 2010).

1.6 Current Research

The results from these studies suggest that those high on CU traits aggression are at risk for future offending as well disruptive behaviour in school. But less is understood about how these variables relate, for example whether disruptive behaviour at school

mediates the relationship between high-risk youths and future offending. Addressing this question would help us to understand the role that school experience plays in the link between personality traits and adolescent offending behaviour. If the school experience is negative then it likely increases the chance of high-risk youths learning and engaging in antisocial behaviour, but if the school experience is positive then it may act as a protective factor for these high-risk youths. Our research attempts to combine the findings of Panckhurst (2010) and Panich (2013) by investigating whether the relationship between CU traits and aggression and future offending is mediated by disruptive behaviour in school.

Overall research suggests that CU traits and aggression have an important role in youth offending and delinquency which also may be influenced by the experiences these youths have in their schooling years. To our knowledge, no research has been undertaken to analyse an indirect path between 'at risk' youths and their future offending behaviours using disruptive behaviours at school as a mediating variable. Thus our primary goal was to test whether evidence for such mediation was present in the low-decile Christchurch sample. If so, we planned to conduct further analyses to explore whether protective factors could be identified among high-risk youths who did not engage in disruptive behaviour at school.

2. Method

2.1 Participants

The sample for this research is the same sample of 124 children studied by McLoughlin and colleagues (McLoughlin, et al., 2008). There was a total 77 (%) boys and 47 girls ranged from 10.5-12.5 years old (mean 10.79, standard deviation 0.50) when the

longitudinal study commenced in 2007 (Time 1). They were students at nine Christchurch decile 1-3 primary schools, including a residential school for boys with severe behaviour difficulties. Although 126 participants were originally recruited, six participants did not complete both the Inventory of Callous Unemotional Traits (ICU) and Child Behaviour Checklist (CBCL; either parent or teacher) scales, one participant was expelled from their current school and was not attending a school when school data was collected, and one participant relocated to Australia with no forwarding contact details, reducing the sample for the present study to 118. From the history questionnaire taken at Time 1, the participants were categorized as 50.8% New Zealand European / Pākehā, 32.5% Māori, 10.3% Pacific Island, and 6.3% other ethnicities. At Times 1, 2 (2008) and 3 (July 2012), data were collected from the children, their parents/caregivers, and teachers. Psychometric test scores were obtained on various domains including the character/temperament of the youth, family functioning and parenting, and parental psychological wellbeing (among others). All of the participants provided written consent for their assessment test results to be accessed and used as part of this longitudinal study.

2.2 Police records

Police records were searched as of July 2012 and summary information was provided to the researcher (Panich, 2013) in anonymised form. No personal information other than birth date and sex were revealed to the researcher. All participants were assigned numbers 1 through to 126 for case by case data analysis purposes. Any youth who had records under the role of “offender” or “suspect” was recorded as offended. Any youth who had been charged was also recorded as offended (from Panich, 2013).

2.3 Time 1 Measures

The following measures were collected by McLoughlin et al. (2010) and were used in the present study.

2.3.1 Alabama Parenting Questionnaire

The Alabama Parenting Questionnaire (APQ, Frick, 2001) is a 42-item scale, with each item scored on a 5-point Likert scale (never, almost never, sometimes, often, always). The questions are focused on relationships and interactions between child and parent. This measure was completed by the parents or caregivers and assessed the frequencies of a number of behaviours which may take place in the home. The questionnaire comprised the following sub-scales: parental involvement, positive parenting, inconsistent discipline, corporal punishment, and other discipline. Scores from parental involvement and positive parenting are counted towards the positive discipline/parenting. The latter three 31 measures are assessments of negative discipline/parenting. The APQ also features 7 items which specifies on discipline practices rather than corporal punishment. Internal consistency for the parent version of the APQ was found to range from .84 to .90 (Dadds et al. 2003).

2.3.2 Children's Attributional Style Questionnaire (CASQ)

The CASQ has 48 items, each of which consists of a hypothetical positive or negative event involving the child and two possible causes of the event. Respondents pick the cause of the event from the pair that better describes why the event occurred. The two causes provided hold constant two of the attributional dimensions while varying the third (Seligman et al. 1984). Three dimensions of attributions (internal – external, stable – unstable, global – specific) are assessed; an equal number of items address each

dimension for both good and bad outcomes (Thompson et al. 1998). A psychometric evaluation of the original CASQ (Seligman et al. 1984) revealed moderate internal consistency reliabilities: positive events ($\alpha = .47 - .73$), negative events ($\alpha = .42 - .67$) and overall composite ($\alpha = .62$). Test-retest reliability are .71 and .66 for positive and negative events, respectively, across 6 months, and .35 for overall composite over 12 months.

2.3.3 Child Behaviour Checklist (CBCL) – Aggression Subscale

The Child Behaviour Checklist (6-18 years) is a widely used assessment to determine a child's problem behaviours across eight different subscales. One of the subscales of the CBCL measures the child's level of aggression. The aggression score for the Teacher Report Form (TRF) is derived from 20 of the 120 items, and for the parent report form (CBCL) from 18 of the 120 items. The parent report form consists of 18 items of short description of problematic behaviours (e.g., argues a lot, suspicious, gets in many fights) to be rated on a 3 point Likert scale (0 – not true as far as you know, to 2 – very true or often true). Higher scores will represent higher levels of aggression. Both checklists have Likert scales ranging from 0 (not true as far as you know) through to 2 (very true or often true). The raw scores are typically converted to standardized t scores.

Measures of reliability and validity for the Aggressive subscale are very high (Achenbach & Rescorla, 2001, in Achenbach et al. 2003). Content validity and criterion related validity for the aggression subscale was tested thoroughly and in both cases demonstrated significant discrimination between demographically matched referred and non-referred children. Construct validity was supported with significant associations with other instruments including Connors and DSM criteria by genetic and

biochemical findings, and by predictions of long term outcomes (Achenbach & Rescorla, 2001, in Achenbach, 2003).

For the present sample used in our study the CBCL was completed by both parents/caregivers and teachers and the two assessments were found to be moderately correlated ($r = 0.572$, $n = 107$). The scores used for the present research were the higher of the two recorded T scores. This is consistent with the approach taken by Frick and colleagues with the APSD (Frick, O'Brien, Wootton, & McBurnett, 1994) and 2005 study (Frick, et al., 2005). The reason for this approach is that a single informant may not see the youth in different environment, and it is likely that some youths will refrain from or hide aggressive behaviours in some situations, especially if they believe the behaviour will elicit a strong negative response. It could also be that there is motivation to underreport socially undesirable behaviour like aggression. Also aggressive or externalizing behaviours, unlike internalizing behaviours, are more easily identified with less opportunity for ambiguity or misinterpretation. Thus, the highest total parent or teacher T scores were used rather than the highest score for each item, given, as mentioned; the questionnaires differed slightly for parents and teachers.

2.3.4 Child Social Behavior Scale (CSBS)

The CSBS (Crick and Grotpeter, 1995) was completed by the youths, and contains 15 items which assess the frequency of occurrence of a number of different school-based behaviours on a 5-point scale. The questionnaire has the following sub-scales: relational aggression, physical aggression, verbal aggression, prosocial behaviour, inclusion, and loneliness. No known normative data are available for this scale (McLoughlin et al. 2010).

2.3.5 Family Inventory of Life Events and Changes (FILE)

The FILE (McCubbin, Wilson & Patterson, 1995) assesses life events and stresses within the family unit. The inventory consists of 171 self-report items which focus on life events and stressors that have occurred in the family unit within the past 12 months. Responses require a 'yes' or 'no' answer. The FILE is separated into 8 sub-categories which include development and relationships, extended family relationships, work, management and decisions, health, social activities, finances and law. The overall scale reliability is reported to be acceptable, and it is suggested that the total scale score be used rather than the scores of the subscales individually due the large amount of variability among the alpha values (0.30 to 0.73) (Grotevant & Carlson, 1989).

2.3.6 Family Relationship Scale (FRS)

The FRS (Tolan et al., 1997) measures six aspects concerning family relationships. These aspects include beliefs about family, cohesion, shared deviant beliefs, support, organisation, and communication. It is a questionnaire that consists of 61 items and can be rated by either one or both parents. Responses are recorded on a 4 point Likert scale on score that most apply to the family (A – not true at all to D – almost always or always true). Cronbach's alpha ranges from 0.54 to 0.87 on all subscales.

2.4 School Records Data Collection

Each of the 124 participants and their primary caregiver had provided consent for information to be collected from their school records and from their teachers. While 22 of the youth participants had not entered into new schools in 2008 (Time 2), the remaining youths had either gone to an intermediate school or started high school. Teachers were asked to give information about youths; academic achievement,

disruptive incidents in school, school attendance and any unexplained absences and extracurricular activity involvement. See Panckhurst (2010) for a more detailed explanation on how this information was obtained from parents and teachers.

2.5 Data Treatment and Analysis

We planned to conduct a mediation analysis of the relationship between aggression scores of the youths, measured at time 1, disruptive behaviour in school and future offending behaviour after school. Our major question was whether disruptive behaviour in school mediates the relationship between initial aggression scores and future offending behaviour. Testing for mediation requires multiple steps (Baron & Kenny, 1986). Firstly is there a relationship (statistically significant correlation) between initial aggression scores, disruptive behaviour in school and future offending behaviour (relationship; A - B - C), second is there a relationship (statistically significant correlation) between initial aggression scores and future offending behaviour (relationship; A - C). Next is there a relationship between initial aggression scores and disruptive behaviour in schools (relationship; A - B), and lastly is there a relationship between disruptive behaviour in schools and future offending behaviour (relationship; B - C). After these relationships have been established we want to see whether the relationship A - C remains significant or decreases in significance after the effect of B (mediator variable) is partialled out of the equation.

If these relationships are significantly established we plan to conduct further analyses using positive parenting variables to further examine the relationships of initial aggression and disruptive behaviour in schools. We want to look at whether influences the relationship of A - B). For example maybe those youths rated as aggressive at initial assessment but did not go on to be disruptive in school may have done so because of

positive parenting practices and those not rated as aggressive initially but do go on to be disruptive in school may have been influenced by negative parenting practices. Lastly those who were rated as aggressive and went on to be disruptive may be the result of continuous negative parenting practices, which have exacerbated their initial problem behaviour.

3. Results

3.1 Descriptive Statistics

The Aggression scores (from CBCL – Aggression subscale ‘parent’ raw scores) for the youths ranged from 50 (36.5% or 46 youths) to 94 (1.6% or 2 youths). Mean Aggression scores for the youths were 57.2 (S.D. = 9.9, see Figure 1.). The cut-off for classifying those who were ‘high’ in aggression was determined from Panckhurst’s (2010) criteria which was above the 75th percentile – Agg>64. Most of the youths (94, 80.3%), fell under the cut-off score for high aggression; however a small subset of these youths were found to be high in aggression. The number classified as highly aggressive according to Panckhurst’s (2010) criteria was 23 (19.7 %).

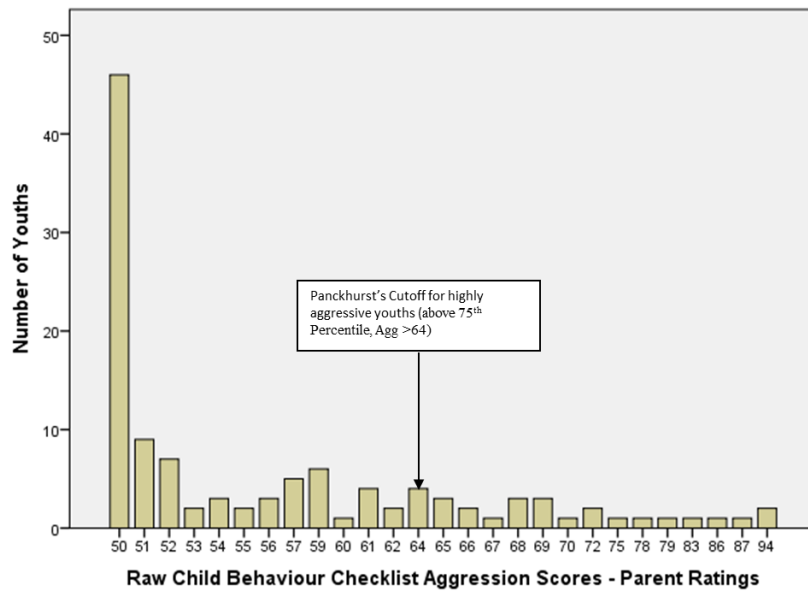


Figure 1. Frequency Distribution of Youth Scores from Parent Ratings on the Child Behaviour Checklist - Aggressions Subscale

Figure 2 displays the distribution of disruptive incidents during the school years. Due to the large positive skew in the original data for disruptive incidents during school, the raw scores were log transformed to try to achieve a more normal distribution and reduce skew for subsequent analyses.

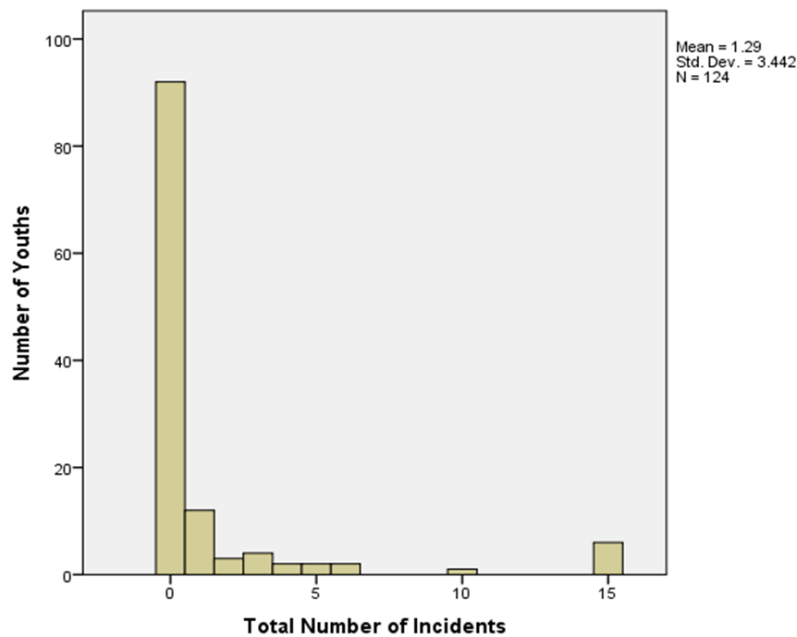


Figure 2. Histogram of Total Disruptive Incidents During School Years

Of the 124 youths we had recorded data for (data was missing for 2 youths), a total of 32 (25.8%) had disruptive incidents at school. The number of disruptive incidents in school per youth ranged from 0 incidences (73% or 92 youths) to 2 or more incidents (up to 15 incidents; 11.8% or 13 youths, see Figure 2.). The mean number of incidents was .40 (S.D. =.80).

Of the 126 youths, 34 (27%) later offended after leaving school, while 92 (73%) had no recorded incidents of offending after leaving school. The correlation between initial aggression scores and future offending behaviour was positive and significant ($r = .355$, $p < .001$, see Figure 2). Therefore, as planned we ran a mediation analysis to test if the relationship between aggression and future offending was mediated by disruptive behaviour at school. Figure 3 displays our initial mediation model for our variables with first order and partial correlations included.

3.2 Mediation Analysis

Figure 3.

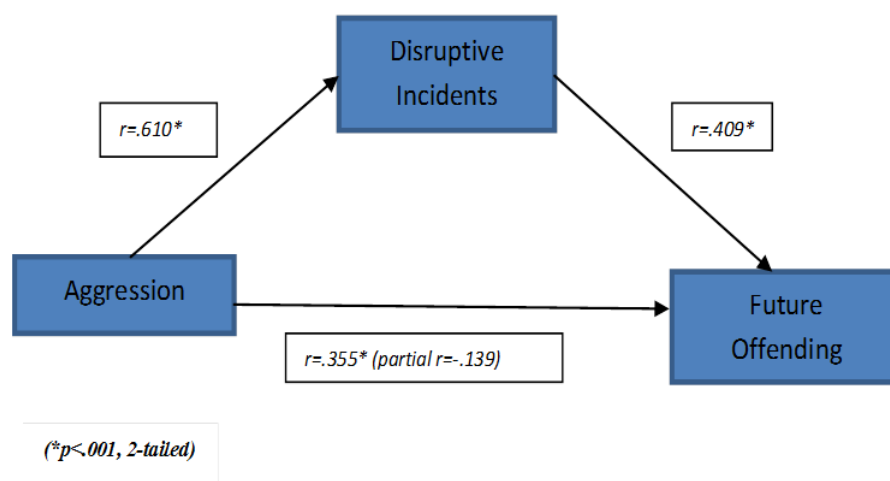


Figure 3. Mediation Model with correlations and partial correlation.

According to Baron and Kenny's (1986) criteria, for variable B to mediate the relationship between A and C ($A \rightarrow B \rightarrow C$), three conditions must be met. First, variations in the levels

of the independent variable must significantly account for variations in the presumed mediator variable (i.e. Path A). Secondly, variations in the mediator must significantly account for variations in the dependent variables (i.e. Path B). Lastly, when the mediator is partialled out, a previously significant relationship between the independent and dependent variables are no longer significant.

The correlations and partial correlations are shown in Figure 3. Using Baron and Kenny's criteria for mediation, we first tested the relationship between initial aggression scores and future offending behaviour and found that the relationship was significant, as reported above ($r=.355, p<.001$, see Figure 3.) Next we examined the correlation between aggression and disruptive behaviour at school and found that these variables were more strongly correlated ($r=.610, p<.001$, see Figure 3.). Lastly we tested the relationship between disruptive behaviour in school and future offending behaviour and found a small significant correlation ($r=.409, p<.001$, see Figure 3.).

We calculated the partial correlation between aggression and future offending behaviour (A-C) controlling for disruptive behaviour in school (B), and found that the relationship was substantially reduced (partial $r=-.139, p=.135$) suggesting a mediation effect of disruptive behaviour in school. We conducted a Sobel Test to test the significance of the mediator variable disruptive incidents using the results of regressions with aggression predicting disruptive incidents ($B=.047, SE=.006$). and aggression and disruptive behaviour predicting offending behaviour ($B=.188, SE=.063$.)

Sobel Test Input: $a=.047, b=.188, s_a=.006, s_b=.063$ (Quantsy.org)

The results of the Sobel Test were significant ($Z=2.78, S.E.=0.003$), suggesting that the indirect path relating initial aggression scores to future offending behaviour via disruptive

behaviour in school was significant, supporting our hypothesis that the latter variable served to mediate the relationship between aggression and subsequent offending.

As a second test to confirm the mediator status of disruptive incidents in school, we conducted a path analysis in AMOS. The model in Figure 3 was evaluated using a Monte Carlo bootstrap test with 10000 samples (parametric sampling). The results of the bootstrap confirmed the mediation effect. The indirect effect of disruptive incidents on future offending was: .082 (90% CI: .018~.146, $p=.025$).

Finally, given that the aggression scores were positively skewed, we investigated whether using a logarithmic transformation would affect the results of the mediation analysis. The correlations and conclusions were similar, so we decided to report the results based on the raw aggression scores. We also found some interesting non-significant correlations between those low in aggression and disruptive behaviours ($r=-.052$, $p=.632$, $n=87$) and those high in aggression and disruptive behaviours ($r=.307$, $p=.112$, $n=28$).

3.3 Building a Model to Predict Offending

Because the results of the mediation analysis showed that both trait aggression and disruptive incidents predicted future offending, we explored whether additional variables might also contribute predictive validity for offending. Specifically, we were interested to determine which family-related variables would increase predictive validity for offending beyond the mediation model in Figure 3. To accomplish this, we developed a model for offending based on our data. This analysis consisted of two stages. First, we identified which family-related variables significantly increased predictive validity for offending. Second, we determined the best combination of family-related variables to predict offending in addition to the mediation model.

Specifically, in the first stage we ran a series of logistic regressions to test whether any of 17 variables (see Table 1.) provided incremental validity for offending beyond aggression and disruptive incidents using a likelihood ratio test. For each variable, a hierarchical logistic regression was conducted in which aggression and disruptive incidents were entered at the first step, and the variable in question was added at the second step. Of the 17 variables considered, 5 showed a significant increase in predictive validity for offending, the Alabama Parenting Questionnaire – Parental Involvement subscale (ratings on how involved parents are in their child’s life) ($b=-.108, df=1$) Children’s Attributional Style Questionnaire – Negative Attributions (youths’ negative attributions about hypothetical situations) ($b=.448, df=1$), Family Relationship Scale (parent ratings) – Cohesion subscale (parent ratings on how cohesive the family unit appears to be) ($b=-.229, df=1$), Family Relationship Scale (parent ratings) – Communication subscale ($b=-.345, df=1$) and Family Inventory of Life Events and Changes – Total score ($b= .109, df=1$). All variables had significant b scores in the expected direction. These initial first stage results suggest (as well as other research – see literature review) that family related variables (e.g. poor communication, poor cohesion, poor family involvement, etc.) can provide additional predictive validity for future offending.

Table 1.

Table 1. <i>List of Variables Used in the Logistic Regressions</i>	
Variable Name	Correlation with Offending
ICU - Parents (raw)	$r=.203, (p=.028)$
AGG - Teacher (raw)	$r=.039, (p=.689)$
APQ - Positive Involvement	$r=-.164, (p=.074)$
APQ - Monitoring	$r=.130, (p=.160)$
APQ – Corporal Punishment	$r=.011, (p=.909)$
APQ – Consistent Positive Discipline	$r=.154, (p=.095)$
APQ - Positive Discipline	$r=.012, (p=.901)$
APQ – Other Discipline	$r=.046, (p=.622)$
CASQ – Positive Events	$r=-.062, (p=.558)$
CASQ – Negative Events	$r=.298, (p=.004)$
FRS – Beliefs About Family (Parent)	$r=.041, (p=.702)$
FRS – Shared Deviant Beliefs (Parent)	$r=.208, (p=.049)$
FRS – Support (Parent)	$r=-.098, (p=.357)$
FRS – Cohesion (Parent)	$r=-.245, (p=.020)$
FRS – Organisation (Parent)	$r=-.046, (p=.665)$
FRS – Communication (Parent)	$r=-.209, (p=.048)$
FILE – Total Score	$r=.358, (p=.000)$

In the second stage, we conducted a ‘best subsets’ analysis to identify the particular combination of family-related variables that provided the best predictive validity for offending. To do this we ran the variables through a best subsets regression in STATISTICA software using the model building component. Using the Akaike information criterion gave a best model with the lowest AIC score of total incidents (log), initial aggression scores, Family Relationship Scale (parent ratings) – Cohesion subscale and Family Inventory of Life Events and Changes – Total score (AIC=73.25, $p=.0015$), Table 2, displays the regression and standardised regression coefficients for the final model. Aggression was non-significant but was still included in the final model due to it being in our original model and because it was included in the best subsets regression result. Based on our final results including a measure of life events and stresses within the family unit and a measure of family cohesion improves the overall prediction of future offending behaviour. In other words, those youths who had high levels of intra-familial stress and low family cohesion were more likely to offend by the time they reached adulthood.

Table 2. <i>Unstandardised and Standardised Regression Coefficients for the Final Model</i>			
Variable	B	Exp(B)	P
Total Log Incidents	.929	2.533	.022
Raw Aggression Scores – Parent Ratings	.019	1.019	.569
Family Relationship Scale – Cohesion Subscale – Parent Ratings	-.180	.835	.074
Family Inventory of Life Events – Total Score	.101	1.106	.012

4. Discussion

The present study extends prior research conducted by McLoughlin et al. (2010), Panckhurst (2010) and Panich (2013) using a sample of youths from low-decile schools

in Christchurch. Specifically, we asked if the relationship between early aggression and future offending behaviour is mediated by disruptive behaviour in school. The goal was to analyse an indirect path between 'at risk' youths (those high in aggression) and their future offending behaviour. We studied a longitudinal sample of 124 children originally investigated by McLoughlin et al. (2010), including early aggression scores (obtained when the youths were aged 10 to 11 years), data about their school experience (obtained from June 2008 to January 2010, when youths were either in intermediate or high school) and lastly offending data (youths were aged 15-16) after leaving school. We found that disruptive behaviour during their school years did significantly mediate the relationship between the youth's initial aggression scores (tested before school age) and future offending behaviour. That is, the significant relationship between initial aggression scores and future offending behaviour was reduced, and was no longer statistically significant, after disruptive behaviour in school was controlled for in the model. This result confirmed our initial suggestions and previous research (Loeber & Farrington 2000; Sutherland, 2011) that negative school experiences increase the chances of high-risk youths learning and engaging in antisocial behaviour once they leave school. Based on these results we improved our model by adding family related variables, to test whether negative family experiences predicted future offending behaviour (after controlling for aggression and disruptive incidents), which has been suggested by previous research (Matherne & Thomas, 2001; Aaron & Dallaire, Derzon, 2010). Our results partially confirmed this as we found that a measure of family cohesion and a total score of events and changes within a family unit were significantly predictive of future offending behaviour. However, a number of other family-related variables we used were not found to be significant in our model, which is surprising as many of these variables had been found to be related to future offending behaviour in

prior research (see Pitts, 1999; Wasserman & Seracini, 2001 and Aaron & Dallaire, 2010).

Overall our results supported previous findings that youths high in aggression are at a greater risk for future offending (Loeber, 1990; Loeber and Farrington 2001; Frick et al. 2003; McLoughlin et al. 2010). We found that most of the youths (80.3%) in our sample who were under the cut-off for high aggression (above the 75th percentile of aggression scores within our sample, as defined by Panckhurst, 2010), had no disruptive incidents (73%) during their school years, and did not go on to offend after leaving school. These results were not surprising as previous research has highlighted that there is a small subset of highly aggressive youths displaying high levels of antisocial behaviour (e.g. Moffitt, 1993).

Our finding that disruptive incidents in school significantly mediate the relationship between aggression and future offending raises some interesting questions about the role the school experience has on future offending behaviour. We consider three possibilities. For example, is it that these youths who are disruptive in school are disruptive because these were the youths that were initially identified as highly aggressive (i.e. those youths who scored above the 75th percentile) and therefore would go on to continue to offend regardless of their school experience? Is it something about the school experience that negatively impacts some youths causing them to engage in disruptive behaviour as a result of frustration or rebellion as suggested by Sutherland (2011), or are other factors influencing our results? We consider these possibilities in turn.

Firstly, a similar number of youths were identified as highly aggressive and also had disruptive behaviour in school (23 youths highly aggressive and 32 youths had

disruptive incidents) suggesting that aggressive traits could play a role during school years and future offending behaviour. However, our findings that there were more youths engaging in disruptive incidents during school than were initially identified as highly aggressive, and that disruptive behaviour significantly mediated future offending suggests that the first possibility is plausible but does not capture the 'full picture'. However, this finding could also be reconciled by that fact that there were more youths engaging in disruptive behaviour than initially identified as aggressive because those 'adolescent-limited' offenders (see Moffitt and colleagues, 1993, 2001, 2002) have begun their offending careers now they have entered the school system and have access and associations to those 'life-course persistent' offenders (i.e. those youths initially identified as aggressive).

Our second suggestion seems to be more plausible because as mentioned more youths engaged in disruptive behaviour during school than were initially identified as high in aggression as well as our finding that disruptive incidents during school is a significant mediator variable (we also tested the relationship between those not identified as high in aggression and disruptive incidents in school and found a nonsignificant relationship, suggesting that the school experience has a greater impact on those youths high in aggression). Our findings suggest that there is something about the school experience that is negatively impacting some youths regardless of whether they were initially identified as aggressive or not. It may be that some youths find the authoritarian and controlling structure of being in school that frustrates or alienates some youths causing them to rebel against the system. Sutherland (2011) noted that the cumulative effect of negative school experience can result in a student's disillusionment for the education system, aggravating pre-existing risk factors (i.e. those identified as aggressive) that

lead a vulnerable person towards antisocial behaviour and offending. This in turn may negatively influence their academic performance if they begin to engage in antisocial behaviour, further impacting the way they respond to the school experience. As the meta-analysis by Maguin and Loeber (1996) revealed; poor academic performance is related to onset, frequency, persistence of delinquent offending in both boys and girls. Therefore, prior results suggest that positive school experiences may significantly decrease the chance of youths engaging in offending after they leave school. Our last suggestion relates to the 'model building' section of our results. We found that there are more variables to consider in our model. In particular we were interested in the role of family-related variables had on our mediation model. We wanted to test positive parenting variables to find out if these variables had any influence on disruptive behaviour and future offending in our model, that is, does positive parenting act as a protective factor for antisocial behaviour in youths? Research has suggested that many family related variables have been found to be related to the development of antisocial behaviour and future offending (Derzon, 2010). Wasserman and Seracini (2001) found that negative experiences within the family environment greatly increased the chance of delinquent behaviour in youths. Our results revealed that those youths who had high levels of intra-familial stress and low cohesion within the family unit were more likely to offend by the time they reached adulthood which supports our third suggestion.

Our final model shows there are a number of variables which are related to future offending behaviour in our sample. Initial aggression scores and a family environment characterised by high intra-familial stress and low cohesion within the family unit sets these youths on a course towards delinquency. They enter the school system already disadvantaged and then are confronted by a school system, that imposes many controls

and rules on these youth's lives and as a result they must try to successfully adjust to these changes. As our results show, many of these youths do not successfully adjust and instead engage in delinquent or disruptive behaviour during their school years. These disruptive behaviours increase the chance (along with their initial disadvantage) that they will continue their delinquent behaviour and start offending after they leave school.

Contrary to intuition and previous research (Maguin & Loeber, 1996; McEvoy & Welker, 2000) we found that many variables we tried to include in our mediation and prediction models were not significantly related to offending. We found in our sample that callous-unemotional traits (CU) were not significantly related to offending in our mediation model, that is, CU traits do not explain any additional variance over and above aggression and therefore was excluded from our model. This finding is consistent with Panckhurst's (2010) results but was not found in McLoughlin et al. 's (2010) or Panich's (2013) findings who both found that CU traits and aggression were both related to offending (however, McLoughlin and colleagues found that aggression accounted for more unique variance compared to CU traits). It may be that our sample size was not large enough to get a significant finding for the CU variable; though we did use the same sample as McLoughlin and Panich who obtained a significant result. However, this discrepancy could be due to differences in research methodology (i.e. McLoughlin et al. 2010 just controlled for aggression when testing for CU traits, whereas we controlled for disruptive incidents as well when testing for future offending behaviour). Another reason could be that CU traits are not related to disruptive behaviour in school in our sample which means it exerts no influence on the paths in our model which is why we found no significant influence on future offending.

We also attempted to expand our mediation model by adding some family-related variables to see whether they added any significant variance to the model. We attached these variables to our mediator variable (disruptive events) but they failed to add any significant variance. However, these variables were then included in our later model building analysis to create a mode to predict offending. We found a couple of these family-related variables were significant in predicting future offending, consistent with findings from Panich's (2013) research. However, we expected to find more significant family-related variables related to offending behaviour in our analysis as other research has found many family-related variables to be associated with offending such as high family conflict and low cohesion, (Haddad et al. 1991; Garber and Horowitz 2002, in Aaron & Dallaire, 2010), living with one parent or step parent i.e. 'family status' (Pitts, 1999; Griffin et al. 2000; Matherne & Thomas, 2001) and having delinquent siblings (Farrington, 1995). These results may have occurred due to family related variables in our sample are not related to disruptive behaviour in school which is surprising as family variables are often associated behavioural outcomes in youths in other studies. As mentioned a surprising finding was that only two family related variables (Family Relationship Scale (parent ratings) – Cohesion subscale and Family Inventory of Life Events and Changes – Total score) were found to be significant predictors of offending in our final model after a best subsets regression. These significant family related variables have been found to be significant by other research along with many other family variables (Haddad et al. 1991; Garber and Horowitz 2002, in Aaron & Dallaire, 2010). Results from other previous research (see literature review and Stattin & Magnusson, 1989; Loeber & Stouthamer-Loeber, 1998; Griffin et al. 2000) suggest that there have been many variables found to be predictive of offending in youths which were not found to be significant in our sample. Pitts (1999) and Matherne and Thomas

(2001) found many family related variables to be significantly related to future offending, which we did not, such as parental involvement, negative attributions, family support, parental monitoring, and shared deviant beliefs. These results may have been obtained due to our sample size in our study not being large enough to be able to detect a significant result for these other family-related variables.

The results along with others (Maguin & Loeber, 1996; Farrington & Loeber, 2001; Sweeten, Bushway & Paternoster, 2009; Henry, Knight & Thornberry, 2012) suggest that there is something about the school experience that influences problem behaviours. Our results are important for future research as we continue to dissect the root causes of delinquency and offending behaviours in youths as they transition from teenagers to adults. Our findings about the role of the school experience on delinquency and offending have practical and theoretical importance in the real world. In many countries around the world youths are required to stay in school until they are at least 16. If being at school is shown to have a negative impact on some individuals causing them to engage in delinquent behaviour, then it is important to understand why. Our results highlight that it is those higher in aggression that school has the most negative impact on, but it is not just limited to those youths. Therefore, our results can push towards a discussion and a rethinking on how we deal with problematic and highly aggressive youths in our school systems. If we can somehow better adjust these youths to the rules and routines of schooling we can have them go through the school system with as little disruption as possible, protecting them from engaging in antisocial and offending behaviour once they leave school. If schools (maybe high schools in particular) could introduce a program to adjust new students to school life, paying particular attention to youths displaying problematic behaviour we may be able to

decrease the amount of disruptive behaviour these youths engage in during schooling, and reduce the chance of them offending after they leave school. The goal would be to 'positively socialise' youths to the school system, with a particular focus on youths who display high levels of aggression and problematic behaviour.

4.1 Limitations and Future Research

There are some limitations within the study that need to be considered. Firstly, additional measures of some constructs could have been included. Our aggression variable was only measured by the CBCL – Aggression subscale (parent raw scores) which limits the way we can 'capture' aggression in these youths. Using a composite aggression score made up of parent, child and teacher ratings of aggressive behaviour would better accurately reflect aggression in these youths. This is important as we have a small sample size and therefore a more accurate measure of aggression would improve the results obtained by our study. This is perhaps why we saw more youths engaging in disruptive and future offending behaviours than were initially identified as aggressive.

The disruptive incidents variable was also potentially problematic. We were only interested in the number of disruptive incidents that the youths engaged in while they were in school. While this gives us some information about their behaviours during school it does not give us much information about the seriousness of the incidents. For example, one of the youths may have engaged in 5 or more disruptive incidents but they may have only been minor incidents whereas, a youth may have engaged in 1 or 2 disruptive behaviours but they could have been serious antisocial incidents. Therefore the way we conceptualised disruptive incidents during school is limited as it tells us nothing about the seriousness of the incidents the youths committed.

Our sample size of $n=124$ in our research was quite small considering the low base rate for serious disruptive behaviours that have been found in other research (Moffitt, 1993; Panckhurst, 2010). While Panckhurst (2010) suggested targeting low decile schools appeared to help address this problem by increasing the base rates of behaviour, we still found very low base rates of problematic behaviour in our sample. However, we still found that only 25.8% of youths had disruptive incidents at school and only 27% of youths later offended after leaving school. As a result a relatively small number of our youths significantly influence our key findings.

Future research needs to be conducted with a larger sample in order to confirm and replicate our findings with a large enough sample to be sure our results are accurate and not due to chance. More research could continue our work by expanding and analysing the role some of the variables play in the interactions within our offending model. Firstly, a better understanding is needed regarding the role of positive parenting variables play during the school years. We know from prior research (Wasserman & Seracini, 2001; Derzon, 2010) about the role of positive parenting on the development of antisocial behaviour, but what about how it influences disruptive behaviour during school years. Further research should be conducted in order to understand whether positive parenting variables in young people lives before entering school influences frequency, duration and seriousness of disruptive behaviour during their school years and whether this influences continues after they leave school. This research would further develop our model of predicting offending in youths, which helps us create a more complete picture of the interacting variables within youth offending.

As mentioned above expanding the understanding of the types of disruptive behaviour the youths engage in during school and the role they play on future offending would be

important future research as from our sample we can see clear differences in the amount of disruptive behaviour that occur. Many youths engage in little to no disruptive behaviour during school, however, this gives us no information about the behaviour itself. Are they engaging in less disruptive behaviour because when they do engage in these behaviours they are serious events? Or in contrast are those engaging in lots of disruptive behaviour only engaging in relative minor events which aren't serious and is that why they engage in the behaviour more frequently. These two questions need to be answered with future research so we can further understand the impact these different types of disruptive behaviours can have on the youth's school experience as we work to create a more comprehensive model on the development of antisocial behaviour.

4.2 Conclusion

In conclusion, this study revealed in a longitudinal sample of youths from low decile schools that the relationship between trait aggression and future offending behaviour is mediated by their disruptive behaviours during their school years. Adding family-related variables to the model improved the predictive accuracy in finding those youths who will go on to offend after leaving school. These findings support previous research that there are key variables that influence the development of antisocial behaviours and tendencies in young people. Nevertheless, more research is needed to further deconstruct these variables to further understand exactly how these variables interact to create an environment which negatively influences youths causing them to engage in antisocial behaviour. This research could help social development programs within families and schools to identify youths who are at particular risk of developing antisocial tendencies as they traverse their school years.

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